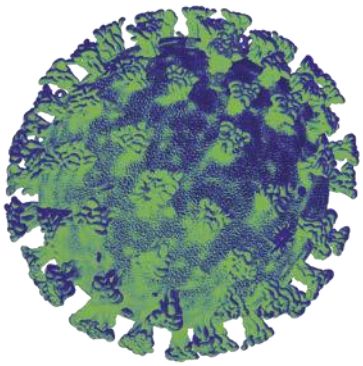
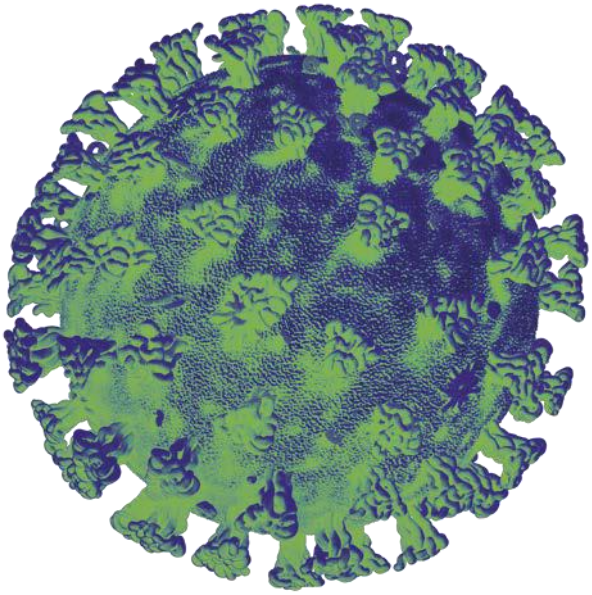
Llywodraeth Cymru
Welsh Government

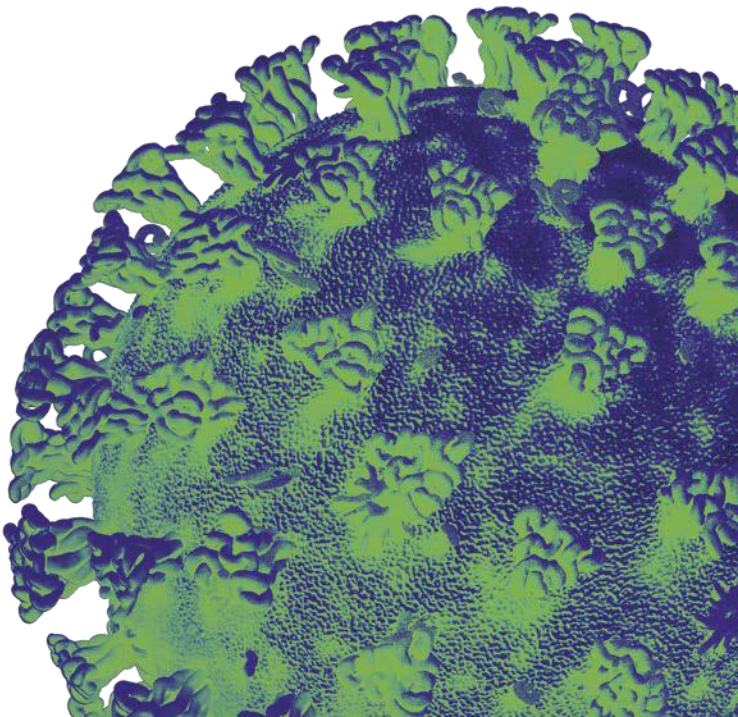
Technical Advisory Group

Use of tests to detect antibody to SARS-CoV-2 antigens

15 July 2020







Welsh Government COVID-19 Technical Advisory Group Consensus Statement: Use of tests to detect antibody to SARS-CoV-2 antigens

Recommendations

- At the current time the use of tests for antibody to SARS-CoV-2 antigens should be focused on the serosurveillance of defined target cohorts for the purpose of understanding the cumulative level of historical infection in those cohorts.
- Policy owners should consider and define what the policy response to different levels of infection in these cohorts should be.
- The utility of antibody testing must be considered in the wider context of other testing that is taking place, including the 'Test, Trace and Protect' programme.
- Antibody testing may assist in the identification of higher risk environments and thus the implementation of risk mitigation measures in those settings. Examples would be settings or occupations associated with high contact rates.
- School staff are one cohort of immediate focus but such testing should be extended to other cohorts or settings with high contact rates where it is considered that there is clear value in doing so. A further immediate priority could be cold food processing plants.
- At this time the results of antibody tests should not be used as the basis for inferences regarding an individual's immunity to repeat infection or the risk that they pose to others.
- Testing should in no way be considered as a substitute for, or mitigation for deficiencies in, the implementation of key interventions such as appropriate hygiene and social distancing.
- There are considerable potential logistical benefits associated with the lateral flow test format. NHS Wales are currently verifying the performance of a commercial lateral flow test and should be supported in completing this work. If the outcome is positive, then this test should be used to increase the intensity of serosurveillance in target cohorts and settings.

Immunology

- The immunological response to infection with SARS-CoV-2 virus is complex. It varies both between individuals and within an individual over time.
- The antibody response is only one element of the immune response to infection.
- The relationship between that immune response and both recovery from the current infection, and protection from repeat future infection is only partially understood. Both are subjects of considerable debate and ongoing research.
- This makes the appropriate use and correct interpretation of antibody tests challenging.

Use

- It is essential that the purpose of testing is clearly defined and should be agreed prior to the implementation of any programme of testing.
- There should also be clarity with respect to the action(s) that will be taken in response to each of the different possible outcomes of testing.
- At the current time the results of antibody testing should not be used to make inferences regarding an individual's level of immunity to repeated infection with SARS-CoV-2, the infection risk that they pose to others, or as the basis for action at an individual level.
- At the current time, tests for detection of virus – the RT-PCR – should remain the primary 'front line' test for the diagnosis of infection with SARS-CoV-2 virus. Antibody tests may have some utility as ancillary tests to the RT-PCR at the individual diagnostic level.
- At the current time, the primary utility of tests for antibody is in the targeted surveillance of defined cohorts in order to generate estimates of prevalence (either point or period) in those cohorts. Such surveillance will facilitate understanding of levels of historical infection in these cohorts and potentially understanding of their place in the dynamics of transmission. One such cohort is that of teachers and teaching assistants.
- Sampling frames must be planned and designed to ensure that they are capable of fulfilling the defined surveillance objective.
- Other applications include the testing of antibodies to SARS CoV-2 as part of the manufacturing process for COVID-19 convalescent plasma

Data

- Sampling and testing should be allied to the collection, curation, sharing and analysis of data required to ensure that the utility and value of that testing are maximised.

Repeated Testing

- As before it is essential that the purpose of repeated testing is clearly defined and, where necessary, agreed prior to implementation.
- In the surveillance context, repeated testing may take the form of the repeated testing of the same individuals with a cohort over time or the testing of different individuals within the same cohort over time. Each may have utility in the context of a specific purpose and the two approaches are not mutually exclusive.
- Sampling frames must be planned and designed to ensure that they are capable of fulfilling the defined surveillance objective.

Issues for Further Consideration

- Antibody tests may target antibody to either the nucleopcapsid or receptor binding domain (RBD; the ‘spike protein’) of the SARS-CoV-2 virus. Further work is required to evaluate and understand the relative merits of each of these options.
- Antibody tests may be undertaken in a laboratory (analysis of serum form a venous collection) or at ‘point-of-care’ (POC; using a lateral flow test). NHS Wales are currently verifying the accuracy of selected lateral flow tests. This evaluation needs to be allowed to reach its conclusion but, if positive and supported by the relevant recommendations, POC testing for antibody will become available for use. Such a test would use capillary blood samples (e.g. from ‘finger pricks’) with a number of associated logistical benefits.

Note: Testing undertaken to evaluate and verify the results yielded by antibody tests prior these tests entering routine front-line use is an essential element of ongoing service development as part of the public health response. Such work takes place within the oversight of the relevant ethics committees.